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Memorandum For: James Balsiger, Director, Alaska Region
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Alaska Region Protected Resources
Melanie Brown, Alaska Region Sustainable Fisheries
From: Douglas DeMaster, Director, Alaska Fisheries Science Center
Subject: **Results of Steller Sea Lion Surveys in Aleutian Islands, Alaska, June 2012**

Land-based and aerial surveys of Steller sea lions (*Eumetopias jubatus*) in the western Aleutian Islands (W ALEU) in Alaska were conducted by the Alaska Ecosystem Program (AEP), National Marine Mammal Laboratory (NMML), Alaska Fisheries Science Center (AFSC) in June 2012 (Figure 1). Land-based surveys (cliff counts of adult and juvenile (non-pup) sea lions and a ground count of live pups approximately 1 month old) were conducted at Buldir Island and at Cape Sabak, Agattu Island by AEP-NMML aboard the USFWS RV *Tiglax* on 26-27 June 2012, while aerial surveys were conducted by AEP-NMML using a NOAA twin Otter aircraft on 25 June 2012. Due to persistent fog and low ceilings in the Aleutian Islands that precluded flights during most of the aerial survey period (17 June-9 July 2012), no sites east of 177°E were surveyed from the air in 2012. Survey and count methodologies in 2012 were identical to those used in 2011.

Pup survey results: A total of 200 live pups were counted at the 4 rookeries and 1 major haul-out in the W ALEU (Table 1). The sum of pup counts at all rookeries in the W ALEU in 2012 (N=191) was similar to 2011 (N=186) but remains considerably below totals from earlier in the decade (2002: N=488; 2005: N= 343). Live pup counts declined at a rate of $-8.9\% \text{ y}^{-1}$ ($P<0.001$) between 2002 and 2012, and $-10.3\% \text{ y}^{-1}$ ($P<0.0001$) between 1997 and 2012 in the W ALEU (Figure 2).

Non-pup survey results: The total non-pup count on all trend sites in the W ALEU was 745 in 2012, a decline of -44% since 2004 (Table 2; Figure 3). Non-pup counts on all W ALEU trend sites declined at rates of $-6.2\% \text{ y}^{-1}$ ($P=0.007$) between 2000 and 2012 (a change of -56%) and $-9.0\% \text{ y}^{-1}$ ($P<0.0001$) between 1991 and 2012 (a change of -84%) after accounting for differences in resolution and orientation between the vertical, high resolution photographs taken in the years 2004-2012 and the 35 mm oblique photographs taken previously (Fritz and Stinchcomb 2005).

2013 Survey Plans: In June-July 2013, AEP will conduct an aerial survey (using a NOAA twin Otter) of all terrestrial rookery and haulout sites in southeast Alaska, eastern, central, and western Gulf of Alaska, and eastern Aleutian Islands. As time and weather permit, the survey will be extended west into the central and western Aleutian Islands. The southeast Alaska survey is part of an effort to assess the status of the entire eastern stock of Steller sea lion in conjunction with Department of Fisheries and Oceans Canada and NMFS SW Fisheries Science Center, the first of three, range-wide post-delisting surveys planned for this stock. AEP, in conjunction with the SWFSC, is also exploring the use of unmanned

aircraft operated off research vessels to survey portions of the Aleutian Islands that have been missed in recent years due to persistent fog and bad weather.

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Literature Cited

Fritz, L. W., and C. Stinchcomb. 2005. Aerial, ship, and land-based surveys of Steller sea lions (*Eumetopias jubatus*) in the western stock in Alaska, June and July 2003 and 2004. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-153, 56 p.

Table 1. Counts of Steller sea lion pups (live) in 2002-2012 in the western Aleutian Islands. Historic and current rookeries are listed in **bold**. Counts at all sites in 2002 and 2010, and at Buldir and Agattu/Cape Sabak in 2012 were made by observers on the ground; counts at all sites in 2005 and 2011, and all except Agattu/Cape Sabak and Buldir in 2012 were made from aerial photographs.

| SITE NAME | 2002 | 2005 | 2010 | 2011 | 2012 |
|----------------------------|-------------|-------------|-------------|-------------|-------------|
| BULDIR | 42 | 26 | 1 | | 0 |
| ALOID | | 27 | 10 | | 9 |
| AGATTU/CAPE SABAK | 212 | 113 | 84 | 76 | 69 |
| AGATTU/GILLON POINT | 159 | 157 | 106 | 83 | 90 |
| ATTU/CAPE WRANGELL | 75 | 47 | 33 | 27 | 32 |
| TOTAL | 488 | 370 | 234 | 186 | 200 |
| ROOKERY TOTAL | 488 | 343 | 224 | | 191 |

Table 2. Counts¹ of adult and juvenile (non-pup) Steller sea lions at terrestrial sites in the central and western Aleutian Islands surveyed in 2012. Historic and current rookeries are in **bold** and sites consistently surveyed and used to monitor population trend are indicated as ‘trend’ sites (Y).

| SITE NAME | REGION | Trend | 2004 | 2006 | 2008 | 2010 | 2011 | 2012 |
|--------------------------------|---------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
| KISKA/PILLAR ROCK | C ALEU | Y | 0 | | 0 | | | 2 |
| BULDIR | W ALEU | Y | 108 | | 43 | 25 | | 1 |
| INGENSTREM ROCKS | W ALEU | | 0 | 1 | 0 | | 0 | 0 |
| SHEMYA | W ALEU | Y | 17 | 18 | 4 | | 3 | 18 |
| NIZKI | W ALEU | | 0 | 0 | 0 | | | 0 |
| ALCID | W ALEU | Y | 125 | 86 | 86 | 95 | | 103 |
| AGATTU/CAPE SABAK | W ALEU | Y | 325 | 282 | 202 | 178 | 302 | 172 |
| AGATTU/GILLON POINT | W ALEU | Y | 374 | 308 | 281 | 237 | 174 | 196 |
| ATTU/MASSACRE BAY | W ALEU | Y | 0 | 0 | 0 | | 0 | 0 |
| DAN'S ROCKS | W ALEU | | 0 | 0 | 0 | | 0 | 0 |
| ATTU/CHIRIKOF POINT | W ALEU | Y | 75 | 30 | 42 | | 22 | 16 |
| ATTU/CHICHAGOF POINT | W ALEU | Y | 54 | 13 | 25 | | 16 | 53 |
| ATTU/KRESTA POINT | W ALEU | Y | 0 | 0 | 0 | | 0 | 0 |
| ATTU/CAPE WRANGELL | W ALEU | Y | 257 | 260 | 247 | 190 | 244 | 186 |
| W ALEU TREND SITE TOTAL | W ALEU | Y | 1,335 | | 928 | | | 745 |

¹ Counts are unadjusted for resolution and orientation differences with 35 mm oblique photographs taken prior to 2004 (Fritz and Stinchcomb 2005).

Figure 1. Terrestrial Steller sea lion rookery and haul-out sites surveyed in 2012 in the central and western Aleutian Islands, Alaska.

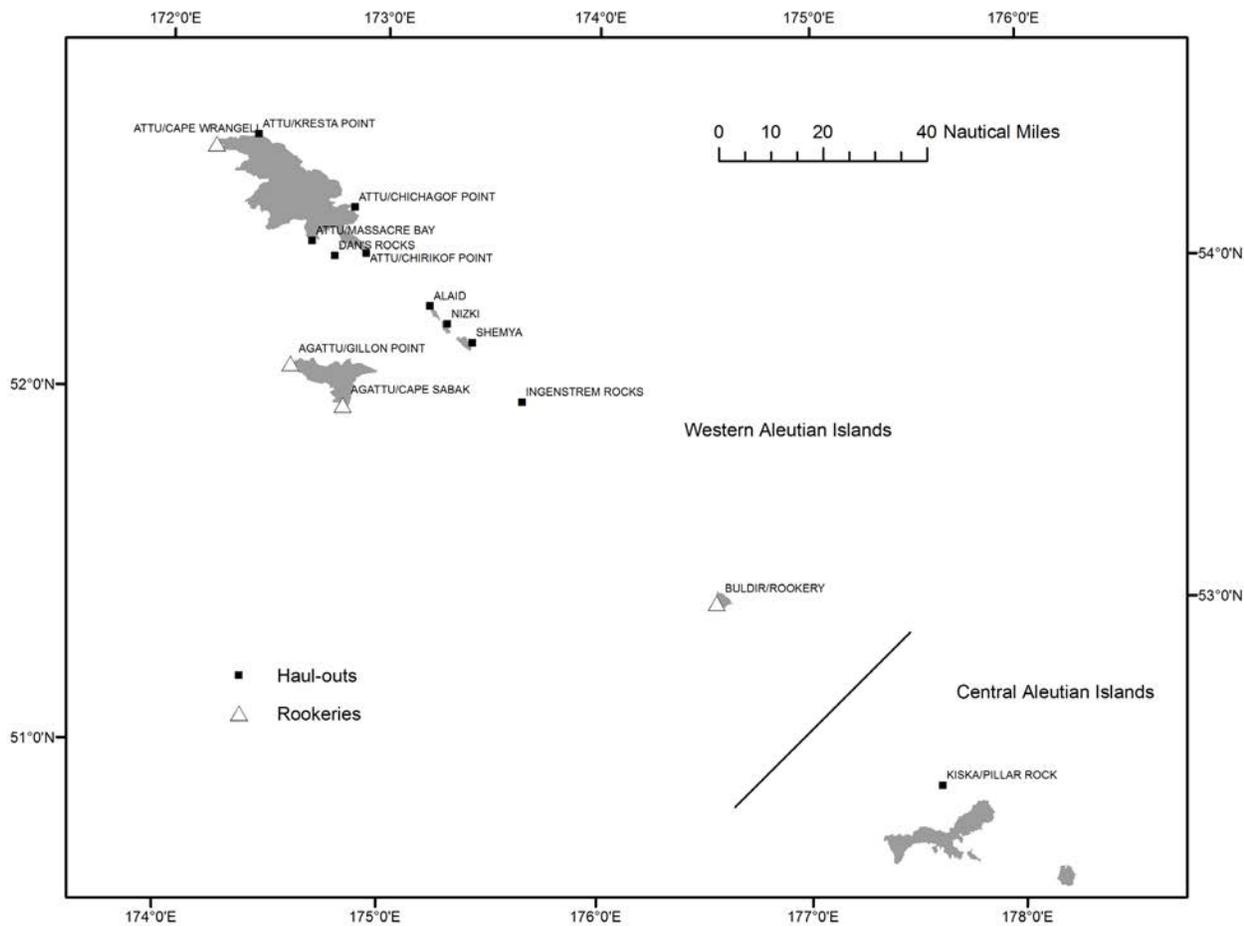


Figure 2. Steller sea lion pup count totals at rookeries in the western Aleutian Islands, 1997-2012.

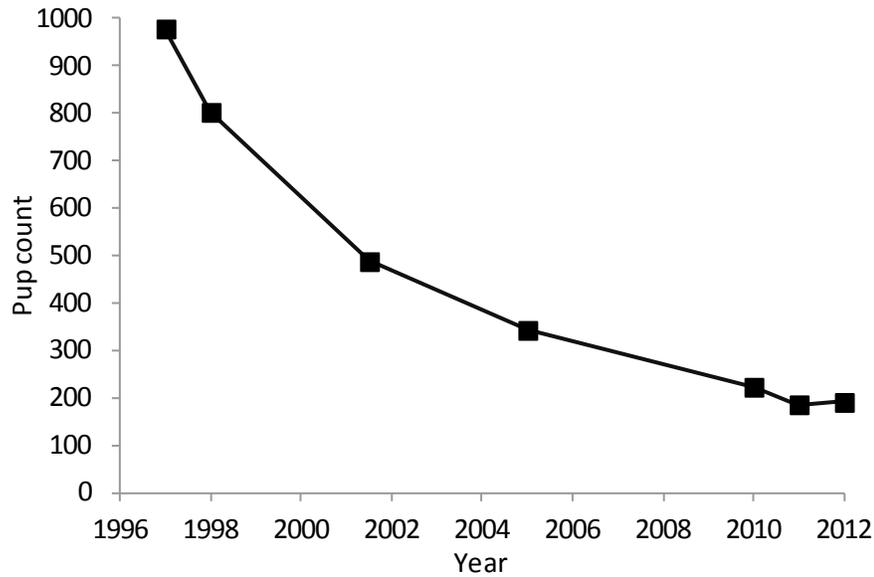


Figure 3. Total counts of adult and juvenile (non-pup) Steller sea lions at trend sites in the western Aleutian Islands, 1991-2012. Counts in 2004-2012 are adjusted for resolution and orientation differences with 35 mm oblique photographs taken prior to 2004 (Fritz and Stinchcomb 2005).

